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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/807,262	10/11/2001	Lee Eisinger	0553.0012	4308

7590 10/02/2002
John M Skeriotis
Fourteenth Floor
One Cascade Plaza
Akron, OH 44308

EXAMINER

SAGAR, KRIPA

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 10/02/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/807,262

Applicant(s)

EISINGER, LEE

Examiner

Kripa Sagar

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>8</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 is rejected under 35 U.S.C. 102(b) as being anticipated by British Patent GB 2035602 to Pollak.

The invention is directed to a method of texturing or patterning the surface of a prototype.

The claim recites the photolithographic steps to form textured or relief images on a surface.

These steps are taught by Pollak. In the second embodiment of the invention, the steps recited include: providing a prototype (ring), forming a layer of photoresist, masking and exposure to a pattern and developing the resist to form the pattern. The final pattern may be used as a master mold to form duplicates (2;61-79).

3. Claim 1 is further rejected under 35 U.S.C. 102(b) as being anticipated by US Pat. 4914004 to Kohler et al.

Kohler's invention is directed towards forming relief images on surfaces and on 3-dimensional objects by a photolithographic process. The steps include coating a surface with a photoresist, irradiation through a mask and removing the

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areas not photopolymerized to provide relief images. Three-dimensional objects may be coated and patterned (5;10-59).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C.103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat.5397683 to Roland in view of US Pat 4929402 to Hull.

The invention is directed to a method of texturing or patterning the surface of a prototype.

The claims recite the photolithographic steps to form textured or relief images on a surface, repeated cycles of lithographic patterning and patterning the surface of a prototype model.

Roland teaches all of the limitations in claim 1. These include providing a substrate (34) with a photoresist layer (32) as shown in Fig.2. Providing a pattern mask (30) with an image that is to be formed in relief on the substrate. The resist is exposed and developed to form the image in relief shown in Fig.7. The process uses a photoemulsion layer to overcoat the resist (cl.2) and re-expose the second layer. The layers are dried (cl.3) after each application (Fig.1). Roland teaches that the entire process may be repeated after forming the image (cl. 5). Roland does not specifically teach cleaning the surface of the object before

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applying the resist (cl.4). Surface preparation prior to coating is conventional, well known in the art and includes pre-cleaning. This step is necessary to promote adhesion of the resist to the surface by removing any inhibiting films and further to remove particles adhering to the surface which would compromise the integrity of the pattern formed.

Roland does not teach forming the pattern on a prototype model formed by (SLG) stereolithography as stated in claims 6, or forming a prototype model with raised images (cl.7).

Stereolithography is a well-known art. Hull teaches rapid prototyping using SLG (1;36-46). The 3-dimensional object may be formed sequentially (layer-by-layer) by exposing a sheet of photosensitive liquid polymer to an image forming radiation (2;21-29). The layers are integrated (see Fig.1) to build up the final model (3; 14-16). Additional images can be formed on the side of the model (Fig.8; 10;48-68).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use models formed by stereolithography as taught by Hull and to form the raised relief images on the models as taught by Roland to successfully design prototype models; because Hull teaches that the technique is flexible, versatile and reduces design cycle time and costs (11;28-64).

6. Claims 2-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pollak in view of Hull.

The teachings of Pollak have been discussed above. Pollak teaches the elements of claim 1 and the use of a 3-d model (cl.7) for surface texturing.

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Pollak does not teach multiple resist coatings and patterning (cl.2,3,5), stereolithography (cl.6) or cleaning the surface (cl.4) prior to resist coating.

Surface preparation prior to coating is conventional, well known in the art and includes pre-cleaning. This step is necessary to promote adhesion of the resist to the surface by removing any inhibiting films and further to remove particles adhering to the surface which would compromise the integrity of the pattern formed.

Stereolithography is a well-known art. Hull teaches rapid prototyping using SLG (1;36-46). The 3-dimensional object may be formed sequentially (layer-by-layer) by exposing a sheet of photosensitive liquid polymer to an image forming radiation (2;21-29). The layers are cured between applications. The layers are integrated (see Fig.1) to build up the final model (3; 14-16). Additional images can be formed on the side of the model (Fig.8; 10;48-68).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use models formed by stereolithography as taught by Hull and to form the raised relief images on the models as taught by Pollak to successfully design prototype models; because Hull teaches that the technique is flexible, versatile and reduces design cycle time and costs (11;28-64).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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US Pat.4151040 to Schiffman teaches forming raised decorative images on flat and curved surfaces of models using photolithography.

A monograph titled "Microelectronics Processing" (ed: D.W.Hess & K.F.Jensen, ACS Press (1989), p. 353) teaches the importance of a clean surface for photoresist adhesion to a surface. This is well known in the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kripa Sagar whose telephone number is 703-605-4427. The examiner can normally be reached on 8:00AM--5:00PM (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on 703-308-2464. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

MH/ks
September 27, 2002



MARK F. HUFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700